Nature's Call

An Activity Newsletter for Kids by Utah's Project WILD--Spring/Summer 2002

Loons and Grebes: Dandy Diving Birds

If you've ever spent some time near a lake or marsh in the early morning hours you may have seen a loon or grebe. Loons and grebes are two types of birds that spend almost all of their lives on water. Both have special adaptations that make them expert swimmers and divers, and together they are sometimes called the "Diving Birds."

When you go swimming, you put on a swim suit, maybe a mask and some fins, and maybe take along a raft. Loons and grebes don't need any special equipment. They have bodies perfectly designed for swimming and diving. Loons and grebes have torpedo-shaped bodies that let them cut smoothly and easily through the water. Their feathers are also ideal for life in the water. Growing tightly together so no water can come through, the feathers make these birds practically waterproof. Their feathers also trap air to help them float better in the water. And when a loon or grebe wants to sink lower in the water to stay hidden or to dive, it can squeeze out the air from in between its feathers to make itself less buoyant. Loons have another advantage for diving. They have solid bones, instead of hollow bones like most birds, which makes them even heavier.

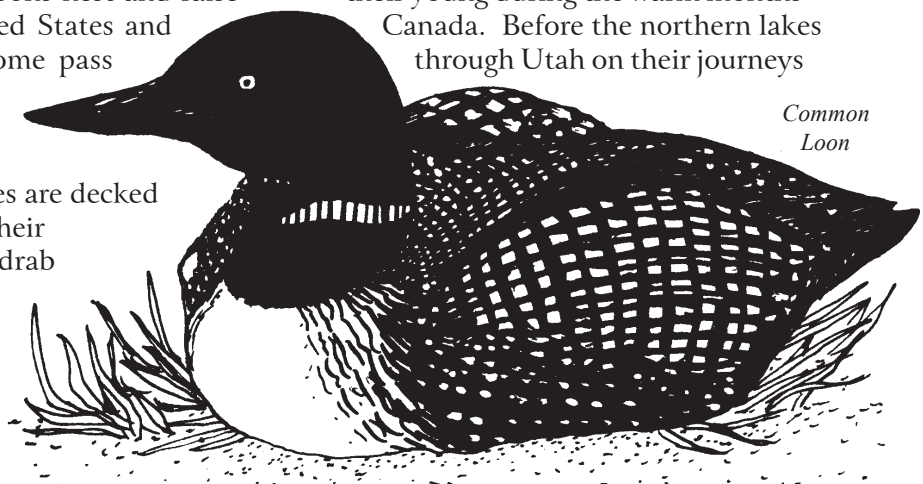
To propel themselves along, loons and grebes have special feet that act like paddles and rudders. The feet of loons are webbed and very large, and grebes have lobed toes on their feet. Both also have feet set way back towards the hind end of their body to give them more swimming and diving power. Grebes were given their family name, Podicipedidae, which means "rump-footed" in Latin because of this feature. Having feet placed so far back on their body instead of centered underneath like in a duck really makes them super divers. But there is a tradeoff. It makes them really terrible at walking on land. The name "loon," comes the word *lom,* an old Scandinavian word meaning "lame or clumsy person." Almost helpless on land, loons shuffle and slide on their bellies, sometimes using their wings to help them move.

Since moving on land is so difficult, loons and grebes rarely go on land. Loons only go on land when they are nesting. Even then, they only go as far as the shoreline, building their nest at the very edge of the lake so they can slip off into the water if danger comes near. Grebes don't even nest on land. Instead they pile water plants and mud from the bottom of the lake on top of floating plants at the edge of the lake, to create a soggy floating nest. Their eggs are sometimes even resting in water.

Within a day after loon and grebe chicks emerge from their eggs, they leave the nest and take to the water. They learn to swim and dive soon. Although they can swim well, sometimes the water is quite cold. That's why young loon and grebe chicks often get a ride on the back of one of their parents. The free ride not only keeps them warn, but keep them safe from underwater predators.

Loons and grebes are mainly fish eaters. Both have long, pointed bills which they use to capture their prey. They swallow their food whole and the bones, scales and spines of fish that all go down into the stomach can pose hazards. To deal with this problem, loons eat small pebbles to help grind up the tough fish parts. Grebes do something more strange. They eat their own feathers to line and protect their stomach. The feathers also slow down sharp things passing through giving strong acids in the stomach a longer time to dissolve anything sharp.

Loons and grebes are both migratory birds. Loons nest and raise their young during the warm months on lakes in the far northern parts of the United States and Canada. Before the northern lakes freeze, they migrate to the ocean coasts. Some pass through Utah on their journeys each spring and fall. Grebes nest over a larger portion of North America. Many nest on lakes in Utah. When winter comes, they take off for warmer regions. Breeding loons and most grebes are decked out in elegant and striking patterned feathers (their nuptial plumage). In the winter they only wear drab grey outfits. Keep an eye out for these diving birds the next time you're out near a lake.



Common Loon

Read on to learn more about the loons and grebes one can see in Utah.

Magical Music: The Voices of Loons and Grebes

"No one who has ever heard the Diver's music—the mournful far-carrying callnotes—can ever forget it."

--Oliver Austin

"The laugh of the deeply insane."

--John McPhee

"The weirdest and wildest of all calls... beautiful and thrilling...maniacal and bloodcurdling."

--Sigurd T. Olson

"Unearthly...perhaps the wildest sound that is ever heard, making the woods ring far and wide."

--Henry David Thoreau

The quotes above share thoughts on the calls of loons. They show how people have long been moved by the haunting and magical calls loons give while courting and defending territories on the wild lakes of the North where they breed. Eerie and mournful, the voice of the loon echoing through the night has also inspired many legends and beliefs in native cultures over time. Because of their calls, loons have come to represent the true spirit of the wild.

Loons and grebes like many other animals communicate with each other through calls to share specific messages which are understood by others of their kind. Read about a few loon and grebe species below to discover how they are unique. For each species, there is a web site listed below where you can hear its calls.

Visit these sites and listen to their calls. Choose one that strikes you in some way and then write an original quote that expresses your thoughts about the call, or describes how it makes you feel. You and your classmates may also want to try to mimic some of the calls. Then you can have a bird calling contest featuring loons and grebes.

Go to **http://www.enature.com**. From here, click on **Field Guides**. Then select **Birds**. After that, choose **Duck-like Birds**. Next, find and click on one of the species written about below. Click on **listen to this Bird**, wait, and the bird call will be played. Afterwards, close the "call" window and hit the "Back Button" to get back to the page where you can choose the next species.

The Common Loon: *Gavia immer*

Of the 5 species of loons, the common loon is the one most familiar to people. This loon is famous for the impressive black and white pattern on its back and its white "pearl necklace" that adorns its neck. An old Native American legend tells how the loon got its feather pattern. The legend is based on beliefs that loons had magical powers such as the ability to restore sight to a blind person. In the legend, a man thanking a loon for restoring his eyesight, tosses a white shell necklace to the loon. As it lands around the loon's neck it breaks apart and some of the shells land on its back forming the white spots on the loon's back.

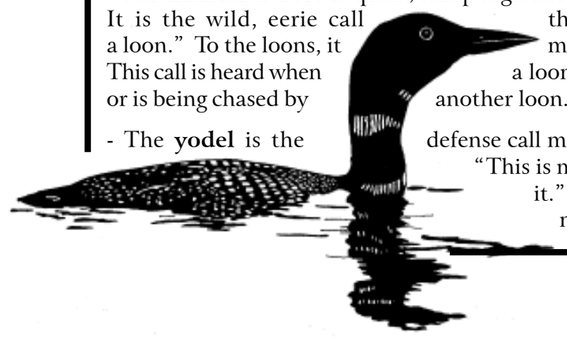
The Common loon has four basic calls: the hoot, the wail, the tremolo and the yodel.

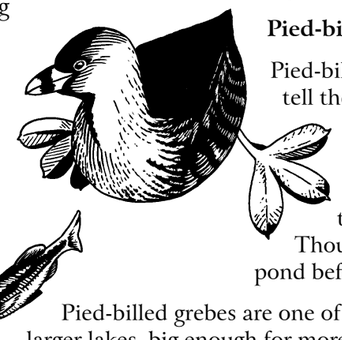
- The **hoot** is the simplest of the calls. It consists of one short note that sounds like its name. The hoot is used to keep contact between parents and chicks and between pairs.

- The **wail** is a long-drawn, mournful call similar to the howl of a wolf. A loon will wail when it wants to call a mate to return if it is far away or out of sight. It is also used to call a chick to come closer. Wails can be one to three notes long and vary in volume depending on how urgent the message is.

- The **tremolo** is a set of quick, sharp high and low notes that sound like a crazed laugh. It is the wild, eerie call thought to have led to the phrase,"crazy as a loon." To the loons, it means, "I'm frightened, or look out, danger!" This call is heard when a loon is disturbed by a boat passing too closely or is being chased by another loon. The tremolo also has three variations.

- The **yodel** is the defense call made only by male loons. The yodel says, "This is my territory and I'm prepared to defend it." It sounds like a series of high and low notes given in a series of repeated phrases.





Eared Grebe: *Podiceps nigricollis*

The eared grebe gets its name from the golden feather tufts that decorate the sides of its head. There are more of these grebes in the world than any other grebe. It is the most common grebe in Utah too. They nest on shallow, marshy lakes with wetland plants like cattails and bulrushes to which they attach their floating nests. Such lakes also are home to the eared grebe's major foods: small crustaceans, snails and aquatic bugs.

Eared grebes are very social and nest in large, crowded colonies. They seek out mates with fancy breeding displays like other grebes. In one display they swim across the lake making a *poo-ee-chk* call which sounds like a chirping frog. Once matched up, pairs perform courting displays where both make the same exact movements and give the same calls at the same time. After mating, the female lays three or four eggs.

When the chicks arrive, they take to the water. Sometimes they are fed by one parent as they ride on the back of another. After 10 days, the parents split up their family, each taking half and going their separate ways. After another 10 days, the chicks have grown enough to take care of themselves.

When the breeding season is over, almost all the eared grebes from all over the continent flock to the Great Salt Lake in Utah and Mono Lake in California. They come to these lakes to feed on masses of brine shrimp. To better digest the brine shrimp they eat, their flight muscles shrink and their stomach grows. They stay at these lakes until the brine shrimp die off as it gets colder. Sometimes they don't leave until January. When they get ready to leave and head south, they rebuild up their flight muscles and their stomach becomes small again.

Pied-billed Grebe: *Podilymbus podiceps*

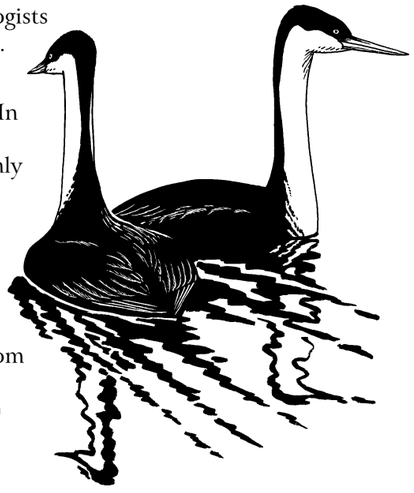
Pied-billed grebes are small, plain, brown-colored grebes. They look like a small duck without a tail. You can tell them from a duck by their short, chicken-like bill. In the breeding season their bill is light colored with a dark vertical band. This banded bill gives them their name. Pied means "being of two different colors."

Being shy and secretive, pied-billed grebes often float low in the water. Sometimes just their eyes and nostrils break the surface of the water and act like a periscope of a submarine. When danger is near, they can sink instantly out of sight. Sometimes they crash-dive, kicking a big splash of water into the air. Though they are shy birds, they have a loud caow-caow-caow call. Sometime you can hear them across the pond before you can see them.

Pied-billed grebes are one of the first birds to arrive at their nesting area in Spring. Usually only one pair nests on a small lake. On larger lakes, big enough for more than one pair to nest, the pied-billed grebe will defend its territory by diving down and pecking at the feet of an intruder as it is chased off.

When the chicks arrive, they are covered in rusty red, white and black stripes. They ride on the backs of their parents like other grebe chicks do. When a parent dives under the water the chick goes along for the dive. It probably hangs onto its parent's feathers with its bill. Pied-billed grebes not only arrive early to nest, they leave late too. Because of this they usually have time to raise two families each year.

The Western Grebe: *Aechmophorus occidentalis* and Clark's Grebe: *Aechmophorus clarkii*



The western and Clark's grebes are two very similar species of grebes. They are so alike that for many years, ornithologists (scientists that study birds) thought they were members of the same species, each just being a different color phase.

Both grebes are large, graceful black and white birds with a long, pointed bill and slender swan-like neck. What is different between the two is how far the black on their head drops down onto their face and the color of their bill. In the western grebe, the black drops down below the eye and the bill is yellowish-olive in color. In the Clark's grebe, the black stops above the eye, and the bill is orangish-yellow in color. Their calls which are almost identical vary only in the number of notes. The western's call is two *kweet* notes and the Clark's is just one.

Studies of these birds eventually showed they were two separate species. The differences in their head pattern, bill color and call were enough for each kind to recognize each other and only form pairs of the same type of grebe.

Western and Clark's grebes are famous for their elaborate courtship displays. In one display known as rushing, or the water dance, paired grebes rise up together, almost vertically, and take off along side one another, dashing across the surface of the water. They also perform a weed dance where they dive under the water, pick up weeds from below with their bills and then rise up together, criss-crossing their bills full of weeds while slowly spiraling around.

Magnified Mercury! *Biomagnification of Pollutants*

Biomagnification is the process by which environmental pollutants build up (bioaccumulate) in the bodies of animals linked in a food chain or food web. For example, first a pesticide may wash from a farmer's field into a lake. Small amounts of the pesticide are then absorbed into aquatic plants and animals called **plankton**. Some of the plankton are eaten by a crayfish, so pesticide in the plankton enters the body of the crayfish. A bass then eats a bunch of crayfish that each have a certain number of pesticide particles inside each of their bodies.

The number of particles of pesticide accumulated in the fish ends up being many times greater than (magnified) the amount originally in the plankton which first absorbed the pesticide. When several bass are finally eaten by a fish eating bird like a loon or grebe, the amount of pesticide entering the bird's body may be great enough to kill the bird or cause it to be unable to raise a family.

Some environmental pollutants that can cause serious harm to wild animals include chemicals such as DDT, dieldrin and PCB's, and heavy metals such as lead and mercury.

Mercury is a shiny white metal found naturally in the environment. You may have seen mercury inside old glass thermometers. Mercury is used in many industries including mining and paper-making. A lot of mercury comes from the pollution generated by cars, coal-burning power plants and the burning of waste materials containing mercury. Mercury from computers and flourescent lights that are just thrown into the garbage and not brought to a hazardous waste drop-off can leach into the ground and pollute groundwater.

When mercury in the air washes down with rain and enters lakes, it is transformed by bacteria into a very toxic chemical called **methlymercury**. Methylmercury readily builds up in the bodies of living creatures and becomes biomagnified as it travels up the food chain.

When people eat fish with high concentrations of mercury, they too can become poisoned. So when mercury levels are very high, states will release fish-advisories to warn people.

Try the following activity to see how environmental pollutants like mercury accumulate and biomagnify in a food chain.

Here's what you will need: 4 containers or small buckets; 16 ping pong balls or similar-sized balls; labels and a marker.

1) Set out the containers and label the first "insect," the second "crayfish," the third "bass," and the fourth "loon."

2) Place 1 ball in the insect container, 2 in the crayfish container, 4 in the bass container and 8 in the loon container. The balls represent the methylmercury that has been absorbed by plants and consumed by animals in a lake. Each animal already has some of the toxin in it that it got by eating something lower on the food chain. The **concentration** of the toxin (number of balls per animal) is lowest in the crayfish and greatest in the loon.

3) Now, the crayfish eats the insect. Take the insect's ball and add it to the crayfish container. Next the bass eats the crayfish. Take the balls in the crayfish container and add them to the bass container. Last, the loon eats the bass. Move the bass balls into the loon container. The container will be quite full, maybe overflowing.

4) What is the concentration of the mercury toxin in the loon? (Number of balls in the loon.) Sixteen "methylmercury" balls in a loon is enough to kill the loon!

5) What can you do to keep mercury out of lakes?

Adapted with permission from Bioaccumulation-Common Loon Lesson, National Wildlife Week 2000. See the National Wildlife Federation's web site at http://www.nwf.org for additional wildlife education activities.